AMENDMENTS TO THE CLAIMS

1 - 34 (cancelled).

35 (original). A method of encoding chemical taggants using multiple pairs of chemicals to represent the bits of a binary serial number wherein the presence of one chemical of each pair represents a first predetermined bit value and the presence of the other chemical of each pair represents a second predetermined bit value.

36 (original). The method of claim 35 where one of the predetermined bit values is 0 and the other predetermined bit value is 1.

37 (original). A method of encoding chemical taggants comprising:

identifying a group of M x N distinct chemical taggants where M and N are integers; and

dividing said chemical taggants into M groups of N chemicals each; and

assigning one taggant chemical from each of the M groups to correspond to each integer from 0 to N-1 inclusive; and

isolating the substance to be tagged and assigning to it an M-digit, base-N serial number; and

adding to the substance to be tagged a quantity of each of the M chemicals corresponding to the values of the M digits in the assigned serial number.

38 - 41 (cancelled).

42 (original). A binary taggant comprising:

at least a first chemical pair comprising:

a first chemical of the first chemical pair capable of functioning as a taggant and representative of the first of two binary values; and

a second chemical of the first chemical pair capable of functioning as a taggant and representative of the second of the two binary values.

43 (original). The binary taggant of claim 42 further comprising:

a second chemical pair comprising:

a first chemical of the second chemical pair capable of functioning as a taggant and representative of the first of two binary values; and

a second chemical of the second chemical pair capable of functioning as a taggant and representative of the second of the two binary values.

44 (original). The binary taggant of claim 42 further comprising:

at least two additional chemical pairs each of said pairs comprising:

a first chemical of each additional chemical pair capable of functioning as a taggant and representative of the first of two binary values; and

a second chemical of each additional chemical pair capable of functioning as a taggant and representative of the second of the two binary values.

45 - 47 (cancelled).

48 (original). An encoded taggant system capable of representing any M-digit, base-N serial number where M and N are integers, comprising:

M x N distinct chemicals each capable of functioning as a taggant;

said M x N distinct chemicals grouped into M groups of N distinct chemicals in each of the M groups; and

each of the N distinct chemical in each of the M groups corresponding to one integer from 0 to N-1 inclusive,

whereby a quantity of the distinct chemicals corresponding to the values of a predetermined, M-digit, base-N serial number may be selected and added to a substance assigned to the predetermined serial number.

49 (original). The taggant system of claim 48 wherein at least one of the taggant chemicals is isotopically substituted.

50 - 60 (canceled).